



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS *SA*
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/627,386	04/04/96	BAUR	G MERCK-1753-D

MM42/0107
MILLEN WHITE ZELAND & BRANIGAN
ARLINGTON COURTHOUSE PLAZA I
2200 CLARENDON BLVD SUITE 1400
ARLINGTON VA 22201

EXAMINER

PARKER, K

ART UNIT	PAPER NUMBER
----------	--------------

2871

DATE MAILED: 01/07/00

18

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

08/627,386

Applicant(s)

Baur et al

Examiner

Kenneth Parker

Group Art Unit

2871



☒ Responsive to communication(s) filed on Sep 7, 1999

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 20-96 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 20-35, 38-43, 46-62, 68-80, 82, 83, and 90 is/are rejected.

☒ Claim(s) 36, 37, 44, 45, 63-67, 81, 84-89, and 91-96 is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 14

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 2871

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. **Claims 20-35, 38-43, 46-52, 54, 56-57, 59, 62, 68-72, 74-75, 78-80, 82-83, 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masubuchi, J.P. Laid Open Application # 54-42163 in view of Bahadur (Mol. Cryst. Liq. Cryst., 1984),**

Masubuchi discloses a parallel field device which is a twisted nematic. Masubuchi shows the use of rubbing. The device has a twisted structure which can be done either way, and the polarizers aligned with the director or perpendicular were functionally equivalent alternatives. Lacking from the disclosure are many of the conventional features to a twisted nematic version of Masubuchi (current/voltage source, pixels, control of brightness, twist in plane perpendicular to the substrate), and the birefringent compensators, the claimed pixel size, polymer liquid crystal and twist angles, all addressed below.

TILT ANGLES, claims 20-35, 90 (relevant to all dependent claims)

Rubbing was explicitly listed, and therefore seen as given explicit fruition. However, arguendo, the method would have been obvious as it was the conventional method at the time and was well known for low cost, and therefore would have been obvious to for these reasons. Rubbing inherently creates an alignment of 2-5 degrees, and this is evidenced by Bahadur which discusses rubbing as an alignment method on pages 26-27. As 2-5 degrees overlaps the claimed

Art Unit: 2871

ranges that, and it has been judicially determined that overlapping ranges would have at least been obvious, the claimed ranges would have been obvious.

DELTA ND and COMPENSATOR, claims 48 and 78-79 respectively

The $n \cdot \Delta d$ of claim 48, and the specific tilt angles of the various claims, and the birefringent compensator. The $d \cdot \Delta n < 4 \lambda$ and birefringent plates were all well known enhancements for TN devices. Bahadur evidences the well known status of the TN cells having been known to be thinner (optically) than $4 \cdot \lambda$ for optimal contrast (page 32), and the well known use of compensators for improving the optical characteristics of TN type devices (page 53). Therefore it would have been obvious, in the device of Togashi, to use a birefringent compensator, and a $d \cdot \Delta n < 4 \lambda$, as were well known for the reasons stated above.

DRIVING DETAILS, claims 42-43, 59, 74, 82, 84

The driving details of the use of a voltage source, time multiplexing and a voltage between 1 and 80 volts were inherent to direct addressing method such as disclosed by Masubuchi and well known for its low cost, including driving with a voltage of less than 80 volts, as the TN devices at the time did not require such a high voltage.

PIXEL SIZE, claim 56

The pixel size was most desirable to be as small as possible to enable the most detailed images, but shrinking the size was costly. The pixel size was therefore a result-effective variable, and as the optimization of a result effective variable was judicially determined to have been within

Art Unit: 2871

the skill level of the ordinary practitioner, selection of these variable ranges would have been obvious.

POLYMER LIQUID CRYSTAL, claim 80

It was well known at the time that polymer liquid crystal were usable in place of non-polymer liquid crystal, and had the advantage of being able to be used without a pair of substrates and for better stability. Therefore it would have been obvious at the time to employ the liquid crystal as a polymer liquid crystal for the benefit of the improved stability and the lack of the requirement use substrates.

2. Claims 20-35, 38-43, 46-58, 60-62, 68-72, 75-79, 82 and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Togashi et al U.S. Patent # and further in view of Masubuchi, J.P. Laid Open Application # 54-42163 and Bahadur (Mol. Cryst. Liq. Cryst., 1984).

Togashi discloses a liquid crystal device which is responsive to a parallel field (fig. 6), and states that the device may be twisted nematic (col. 11, lines 46-55). The electrode structure is an intermeshed set of comb shapes), the thickness is disclosed as 10um (col. 7, lines 55-65).

Masubuchi completes the disclosure by disclosing a parallel field device which is a twisted nematic, showing many of the inherent features of TN devices not explicitly disclosed by Togashi (polarizers, the polarizer angles, the gray scale resulting from voltage, etc.).

Art Unit: 2871

Lacking from the disclosure are many of the inherent features to a twisted nematic version of Togashi (pixels, control of brightness, polarizer, analyzer, polarizer and analyzer at 90 degrees, twist in plane perpendicular to the substrate), the $n \cdot \Delta d$ of claim 48, and the specific tilt angles of the various claims, the use of dichroic dye and birefringent compensator plates. Masubuchi shows that the TN condition of Togashi is enabled, disclosing a parallel field TN, and showing that it must be rubbed or oblique deposited. Togashi shows an upper layer which is used as a gate insulator.

TILT ANGLES, claims 20-35, 90 (relevant to all dependent claims)

Togashi does not give any further details on creating an alignment condition. The conventional method at the time, and low cost method was rubbing. Therefore it would have been obvious to use the conventional rubbing method for its low cost. Rubbing inherently creates an alignment of 2-5 degrees, and this is evidenced by Bahadur which discusses rubbing as an alignment method on pages 26-27. As 2-5 degrees overlaps the claimed ranges that, and it has been judicially determined that overlapping ranges would have at least been obvious, the claimed ranges would have been obvious.

DRIVING DETAILS, claims 55, 58, 60-61, 74-77,

The driving details were inherent to the active matrix driving such as disclosed by Togashi, including driving with a voltage of less than 80 volts, as the TN devices at the time did not require such a high voltage.

PIXEL SIZE, claim 56

Art Unit: 2871

The pixel size was most desirable to be as small as possible to enable the most detailed images, but shrinking the size was costly. The pixel size was therefore a result-effective variable, and as the optimization of a result effective variable was judicially determined to have been within the skill level of the ordinary practitioner, selection of these variable ranges would have been obvious.

Togashi discloses the pixel sizes as 50um, which then requires the spacing to be less than 50 um. Having a spacing of less than 2um would have required line widths of 2um or less, which was possible but very difficult and expensive at the time of Togashi. Therefore, it would have been obvious to have a spacing of greater than 2um to enable low cost fabrication, thereby implying a spacing of between 2 and 50 um.

DELTA ND and COMPENSATOR, claims 48 and 78-79 respectively

The $d \cdot \Delta n < 4 \lambda$, and birefringent plates were all well known enhancements for TN devices. Bahadur evidences the well known status that the TN cells were known to be thinner (optically) than $4 \cdot \lambda$ for optimal contrast (page 32), and the well known use of compensators for improving the optical characteristics of TN type devices (page 53). Therefore it would have been obvious, in the device of Togashi, to employ a birefringent compensator, and a $d \cdot \Delta n < 4 \lambda$, as were well known for the reasons stated above.

POLYMER LIQUID CRYSTAL, claim 80

It was well known at the time that polymer liquid crystal were usable in place of non-polymer liquid crystal, and had the advantage of being able to be used without a pair of substrates

Art Unit: 2871

and for better stability. Therefore it would have been obvious at the time to employ the liquid crystal as a polymer liquid crystal for the benefit of the improved stability and the lack of the requirement use substrates.

3. 73 rejected under 35 U.S.C. 103(a) as being unpatentable over Masubuchi, J.P. Laid Open Application #52-108604 in view of Bahadur (Mol. Cryst. Liq. Cryst., 1984),

Masubuchi discloses a parallel field device which is a twisted nematic featuring dichroic dye added. Masubuchi shows the use of rubbing. Lacking from the disclosure are many of the inherent features to a twisted nematic version of Masubuchi (current/voltage source, pixels, control of brightness, twist in plane perpendicular to the substrate),

TILT ANGLES

Rubbing was explicitly listed, and therefore seen as given explicit fruition. However, arguendo, the method would have been obvious as it was the conventional method at the time and was well known for low cost, and therefore would have been obvious to for these reasons. Rubbing inherently creates an alignment of 2-5 degrees, and this is evidenced by Bahadur which discusses rubbing as an alignment method on pages 26-27. As 2-5 degrees overlaps the claimed ranges that, and it has been judicially determined that overlapping ranges would have at least been obvious, the claimed ranges would have been obvious.